

CLAIMS

What is claimed as being new and desired to be protected by LETTERS PATENT of the United States is as follows:

1. A paper currency sterilization system for killing all viral and fungal microorganisms on paper currencies comprising, in combination:

a sterilization chamber in a generally rectilinear configuration having a horizontal bottom wall and a parallel top wall, and with a vertical front wall and a parallel back wall and two side vertical parallel side walls there between, the front wall being formed with an input slot adjacent to the bottom wall and the back wall being formed with an output slot adjacent to the bottom wall;

a conveyor system comprised of two co-acting belts fabricated of a Kevlar mesh having strands with enlarged apertures there through, the belts including a lower belt and an upper belt in facing contact throughout the entirety of their extents through the interior of the sterilization chamber, the belts forming a reception area exterior of the sterilization chamber adjacent to the input end with the lower belt extending outwardly from the sterilization chamber a greater distance than the lower belt to provide a surface for receiving paper currency to be sterilized;

a plurality of small diameter reversing rollers including an input set of reversing rollers disposed one above the other in a vertical alignment interior of the sterilization chamber adjacent to the front wall and an output set of reversing rollers in vertical alignment interior of the sterilization chamber adjacent to the rear wall, the reversing rollers adapted to convey the belts in contact with each other and with paper currency there between through the sterilization chamber from the input slot to the output slot for the movement of belts and paper currency in a serpentine path of travel;

a pair of elastomeric input pressure rollers interior of the sterilization chamber adjacent to the input slot and a pair of elastomeric output pressure rollers within the sterilization chamber adjacent to the output slot, the pressure rollers adapted to place pressure on the belts moving there between and to assist in the precluding the loss of high pressure from within the sterilization chamber;

a pair of elastomeric input pressure blocks including an upper block and a lower block interior of the sterilization chamber between the input slot and the input pressure rollers, and a pair of elastomeric output pressure blocks including an upper block and a lower block interior of the sterilization chamber between the output slot and the output pressure rollers, the pressure rollers and blocks adapted to place pressure on the

belts and paper currency moving there between and to assist in the precluding the loss of high pressure from within the sterilization chamber;

a drying zone within the sterilization chamber including a vertical plate laterally spaced from the back wall with a slot adjacent to the upper wall and with a fan to dry and cool the belts and paper currency passing there through;

a heating element within the sterilization chamber adapted to increase the temperature within the sterilization chamber to about 270 degrees Fahrenheit;

a pressure assembly within the sterilization chamber adapted to increase the pressure within the sterilization chamber to about two atmospheres; and

drive members adapted to drive the belt at a speed at about 3 inches per second with the belts moving in a serpentine fashion along a path of about 10 feet whereby each piece of paper currency being sterilized is within the sterilization chamber with a high pressure and temperature for about ten minutes, the drive members also including upper guide rollers to move the upper belt in a return path of travel above the chamber and lower guide rollers to move the lower belt in a return path of travel below the chamber.

2. A paper sterilization system comprising:

a chamber having one wall with an input slot and another wall being formed with an output slot;

a conveyor system comprised of two co-acting belts including a lower belt and an upper belt in facing contact throughout the entirety of their extents through the interior of the chamber;

a plurality of rollers adapted to convey the belts in contact with each other and with paper there between through the chamber from the input slot to the output slot;

a heating element adapted to increase the temperature within the chamber to between about 150 and 400 degrees Fahrenheit;

a pressure assembly adapted to increase the pressure within the chamber to between about 1 and 4 atmospheres; and

drive members adapted to drive the belt and paper at a speed sufficient to kill all viral and fungal organisms on paper moving through the chamber.

3. The system as set forth in claim 2 wherein the chamber is in a generally rectilinear configuration having a horizontal bottom wall and a parallel top wall, and with a vertical front wall and a parallel back wall and two side vertical parallel side walls there between, the front wall being formed with an input slot adjacent to the bottom wall and the back wall being formed with an output slot adjacent to the bottom wall.

4. The system as set forth in claim 2 and further including a pair of elastomeric input pressure rollers interior of the

chamber adjacent to the input slot and a pair of elastomeric output pressure rollers within the chamber adjacent to the output slot, the pressure rollers adapted to place pressure on the belts and paper moving there between and to assist in the precluding the loss of high pressure from within the chamber.

5. The system as set forth in claim 4 and further including a pair of elastomeric input pressure blocks including an upper block and a lower block interior of the chamber adjacent to the input slot and a pair of elastomeric output pressure blocks including an upper block and a lower block interior of the chamber adjacent to the output slot, the pressure rollers adapted to place pressure on the belts and paper moving there between and to assist in the precluding the loss of high pressure from within the chamber.